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THE PRIVATE SECTOR AND SKILL FORMATION
IN THE UNITED STATES: A SURVEY

by
Lisa M. Lynch

WP# 3125-90-BPS

February, 1990

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A SURVEY

by

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September 15, 1989

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Although the United States still produces more output per unit of input than any other nation, we are in the midst of a serious productivity crisis. The nature of this crisis is not so much in the level of productivity but rather the fact that productivity is not growing as ⁵fast as it used to in the U.S.. In addition, our major economic competitors have much higher rates of productivity growth than the U.S.. Figure 1 highlights this issue with a comparison by country of average annual percentage changes in manufacturing productivity across different time periods. Although the U.S. has returned to productivity growth rates in the 1980's that are higher than the rates in the 1970's, a great deal of this improvement was achieved through the closure of inefficient plants and the permanent lay off of workers. This suggests that these productivity gains are likely to be short in duration and that the productivity crisis is not over yet.

Figure 1 presents productivity numbers for the manufacturing sector alone. However, most employment growth in recent years in the U.S. has been in the service sector. Since it is difficult to obtain international comparisons for the service sector, Table 1 presents some figures on productivity growth just in the U.S. in industries other than manufacturing. With the exception of the communications industry, these numbers indicate even lower productivity growth in the service sector than in manufacturing. These numbers may reflect higher worker discontent in the service

sector or just larger measurement problems which make comparisons with numbers from the manufacturing sector difficult.

There are many other explanations of why productivity growth in the U.S. has slowed down (see Bailey and Chakrabarti (1988) for a comprehensive survey). However, one of the most obvious differences between the U.S. and some of its competitors is in the skill level and general training of the labor force. As U.S. firms continue to face change due to increasing international competition, deregulation, technological innovation, and the demographic composition of the work force, they are being challenged to examine the skill formation process of their work force in order to increase productivity and remain competitive. In addition, as the service sector continues to grow there is increasing need for "knowledge workers" in professional and technical occupations. Traditional educational institutions have not always been able to deliver programs to train these kinds of workers, especially in those industries characterized by rapid technological change. Therefore, companies find themselves required to develop costly internal training programs in order to remain competitive.

Part of the reason we are in this current crisis is due to our past successes. Mass production techniques led to the deskilling of jobs. By defining jobs narrowly and making each job easy to learn many firms obtained flexibility in the workplace through the interchangeability of workers with limited skills and experience rather than training workers to become

multiskilled. However, the countries that are experiencing rapid growth in productivity today have typically followed an alternative model in which firms provide both general and firm specific skills to their workers. This creates a new type of flexibility in the workplace which is more compatible with rapid technological change and new production techniques such as "just-in-time". Broader skill training for all workers reduces the need for supervisors and allows the day-to-day management of the firm to be performed by workers rather than supervisors. This reduces the hierarchal structure of a typical firm dramatically. In addition, the investment in workers' training is done within the context of an overall human resource management strategy that links selection, training, compensation, performance appraisal and employment security.

This paper presents a survey of the role of private sector in the skill formation of workers in the U.S.. It examines current practices and discusses alternative models of the provision of training to workers. It begins with a brief survey of who needs training, who is getting training, how much training is being done, how much it costs, who are the training providers, and how firms in other countries provide training. The paper then gives some specific examples of "best practice" in the U.S. and concludes with some recommendations and alternative scenarios U.S. firms may pursue into the 1990's.

THE 'FACTS' ON TRAINING

Who needs training?

There are four primary groups of workers who need training. These include new entrants into the labor force, permanently displaced workers, employed workers and long term unemployed workers. New entrants into the labor force are made up of three sub-groups, each with varying stocks of skills and new skills needs. These groups are composed of young workers entering the labor force for the first time, re-entrants (e.g. women) into the labor force who may have worked in the past but have been out of the labor force for a period of time, and immigrant workers who come with a variety of skill levels, work experience and proficiency in English. Obviously, the range of training programs that need to be provided to these three groups of workers varies substantially.

Permanently displaced workers may have been displaced as a result of technological change in their industry or occupation, or to changes in demand due to increased international competition or deregulation. In all cases these workers have typically substantial work experience, high skill levels, high costs associated with mobility, and shorter potential future work periods to recoup any investments made in their training. By definition these workers are no longer employed so their training is usually provided outside the firm. However, many firms are increasingly providing career counseling and some training for jobs outside the firm for workers who will be permanently laid off before these workers leave the firm.

There are three types of employed workers who need training - those who are seeking promotions, those who need maintenance of already acquired skills, and those who are being redeployed within the firm. For this last category of workers it is critical that firms have excellent human resource forecasting and planning so that they can correctly identify: (a.) "at risk" workers who will be displaced in the future, and (b.) new vacancies and their skill requirements.

The final category of workers with training needs are the long term unemployed. The training of workers in this category has usually been done through government programs. The effectiveness of these government based training programs has been mixed (see Lalonde (1986) and Bassi (1984) for surveys on this) with little effect on the wages of men and some positive effect on the wages of women workers. In addition to training the long term unemployed, government policy in the U.S. has focused primarily on young workers and those workers displaced by international competition.

Company training policies have focused primarily on developing formal training programs both within the firm and off-site for young workers, re-entrants, those who are being promoted, those needing skills maintenance, and those who are being redeployed. Firms also provide extensive informal training to new workers but typically with little understanding of how much is being done, who is receiving it, who is providing it and when, how much time it takes, how much it costs, and the returns

to this type of training. Most of the firm provided training in the U.S., both formal and informal, is quite specific to the particular needs of the individual firm or work site. More general training is left to what workers acquire on their own in the educational system before they enter the workplace, or to training they receive from schools (community colleges or night school) or proprietary institutions, such as vocational and technical institutions, after they have left school and have begun to work.

How much is spent on training?

While we know how much is spent by the government every year on training, our knowledge of how much is spent by the private sector is much more limited. There have been few comprehensive surveys of U.S. firms on what is spent on training. Those surveys that have been done are usually of large firms and often do not have data that is comparable from year to year. One data set that has attempted to create a year-to-year analysis of training is reported in Training magazine's annual Industry Report. This survey is a mailed questionnaire of firms with 100 or more employees drawn from Dun and Bradstreet's business directory and Training Magazines' circulation list. Their response rate varies from year to year but in 1988 they obtained information on 1,496 firms (a 15.8 percent response rate).

Although there are problems with comparing the data from year to year, Figure 2 presents numbers from this survey on the real costs of training in the U.S. and the average real training

dollars spent per trained worker from 1986-1988. There appears to have been a very dramatic rise in the amount of money spent on training in 1988, however, part of this may be do to changes in the sampling procedure. For example, in the 1988 survey, the questions on training were asked by plant location rather than for the entire organization as in previous years. This is one possible source of the increase in training dollars. At the same time, the survey dropped responses from firms with fewer than 100 employees. This gave greater weight to larger firms who were more likely to spend money on training. The firm who conducted the survey concluded that these changes probably meant that there was no real growth in budget expenditures for training from the 1987 figures (see Feuer (1988)). Nevertheless, these numbers do indicate that there is a large amount of resources directed towards providing formal training to workers by U.S. firms. Anthony Carnevale (1986,1988) has conducted similar surveys for the American Society for Training and Development and found comparable trends in the cost of private sector training.

Ann Bartel (1989) reports findings from a survey conducted by the Industrial Relations Research Center of the Columbia Business School during 1986-1987 of 493 business units (representing a 6.4 percent response rate to their original sample) on the costs of training by type of worker. These numbers are reproduced in Table 2. Managers, professional and technical workers receive the highest per capita expenditure of training. In addition, unionized clerical and

manufacturing/production workers have more money invested in their training than their nonunion counterparts.

In spite of the information presented in the various surveys described above, we still do not really know how much is being spent on training in the U.S.. Since we do not have a detailed longitudinal survey of firms it is difficult to relate changes in training investments over time with changes in productivity. Even at the cross sectional or case study level, many firms have difficulty in providing information on how much training actually costs. This is especially true for informal training which is the largest sources of training. Often firms do not know who is receiving informal training, who is providing it, and how much time it involves.

Who receives training?

While there have been many surveys on who receives government provided training, there has not been the same systematic survey of who actually receives training provided by the private sector in the U.S.. Exceptions to this include studies by Mincer (1983, 1988), Brown (1983, 1989), Lillard and Tan (1986), Pergamit and Shack-Marquez (1986), Barron et. al. (1987), and Lynch (1988, 1989). Each of these studies used data on training obtained from surveys of individual workers. Unfortunately, each of these papers is subject to different limitations. Some of the more critical issues include the lack of complete employment, training and schooling histories on individuals in the various surveys, difficulties in actually

measuring the amount of private sector training the respondent received, and problems in distinguishing firm-specific from more general basic skills types of training.

Table 3 presents the different questions used in each of these studies. Few of these questions actually ask about the training the respondent has acquired on current or past jobs. For example, the question from the Panel Study of Income Dynamics, PSID, is how long it took the "average" person to become qualified for the job, not how long the respondent actually took to become qualified or where they obtained the necessary training.

In the older National Longitudinal Survey, NLS cohorts, training is measured as training received or used on the current job, therefore, one is not able to observe when the training took place or other types of training undertaken by the respondent. The lack of information on the timing of training is also a limitation with the Current Population Survey, CPS, data. In addition, if most of the training is concentrated during the early years of a worker's employment experience, these questions will not pick up this training experience.

The data from the Employment Opportunities Pilot Project is interesting since it contains very detailed information on the first three months of training in a firm. Unfortunately the firms included in the survey are not representative of firms in general and the sample is constructed to only obtain information on the most recent hire. Finally, the new National Longitudinal

Survey Youth cohort has data that allows one to reconstruct the entire training history for each individual. The data is particularly useful in distinguishing between company training, off-the-job training and apprenticeships. However, these data capture primarily formal training programs rather than informal training.

In spite of these limitations all of these studies have analyzed the characteristics of those who receive training (see Lillard and Tan (1986) for a survey of the major findings using data from the CPS, FOPP, and older NLS cohorts and Lynch (1989) for the NLS youth). Some of the major findings using data from surveys of individuals include:

- on-the-job training significantly raises wages for workers
- off-the-job training improves earnings but not as much as OJT
- while there is not a significant difference in the probability of males and females receiving any type of training, males are more likely to receive OJT and females off-the-job training
- nonwhites are less likely to receive on-the-job training than whites, holding all other characteristics constant
- the likelihood of receiving company provided training drops when the local labor market has high unemployment
- company provided training for young workers is not very general, i.e. not portable from employer to employer
- while there is a link between schooling and company

training it is not so much in the number of years of school but rather in whether or not the individual has finished high school or college

- rapid technological change in the industry of employment increases the probability of receiving managerial training and in-house company programs
- being in a union significantly raises the probability of receiving on-the-job training or being an apprentice
- managers, professional and technical employees are most likely to receive company training

The few surveys that have used company based data on training (e.g. Bartel, Barron and Bishop) have found similar findings to those above. In addition they have determined that:

- large firms are more likely to provide training than small firms
- firms introducing new technologies are more likely to provide in-house training
- formal training programs are just one part of a well developed internal labor market
- employers appear to be paying for a portion of general training but high turnover rates lower the amount of general training provided

Who are the training providers?

In 1983 the Department of Labor conducted a supplemental survey in the Current Population Survey on the extent of training in the U.S.. The survey identified the sources of training

needed for qualifying for jobs and the sources for improving skills once in the job. The most common sources of training included school and informal on-the-job training. As reported in Carey and Eck (1984), 14 percent of all workers upgraded their skills on the job using informal training, 11 percent used formal company programs and 12 percent used school programs (including vocational and technical institutes, community colleges etc...). Relatively few workers used correspondence courses, the Armed Forces, or friends or relatives for training. Table 4 provides a breakdown of source of training by major occupational groupings.

What types of training are being provided?

Most company provided training can be divided into four major categories. These include management development and supervisory skills; functional and technical skills; basic remedial education; and other subjects. The management development courses are typically used as a way to improve organizational effectiveness and competitiveness through improved managerial skills. These types of courses are usually the longest and most expensive for firms. Examples of these types of programs include participation of employees in full-time residential programs at universities of 1-14 weeks (executive programs); reimbursement of expenses for executive MBA programs; short courses typically of 1-3 days offered by industry associations, universities or training consultants; and company specific programs. (For a detailed survey of management training courses see Saari et. al. (1988)).

Functional and technical skills training refers to training courses which are related to work skills and knowledge other than courses included under management development. In terms of overall participation of employees in training, this category of training has the highest participation rate. Examples of these kinds of training programs include apprenticeship programs entailing 2-4 years of phased work and study, and teller-training in banks which may take 3 weeks. (see Lusterman (1977) for additional examples))

Basic remedial education includes reading, writing and arithmetic. As the number of immigrant workers in the labor force has increased more firms, such as those in the hotel industry, have introduced on-site "English as a second language" programs as well. This is the area of training which is arguably the most general, and therefore, firms are usually more reluctant to invest large amounts into it.

In spite of their increasing importance as a training providers, there has been relatively little analysis of proprietary schools. With the exception of a few studies (e.g. Freeman (1974) and Lynch (1989)) there is little known about the impact of these schools on the employment experience of participants. In general these schools provide a wide range of services. These include job placement and vocationally oriented training courses. The courses tend to be very time intensive reflecting the need for most students to be working a regular job. Vocational and technical schools provide programs that are

similar to many on-the-job training programs or apprenticeships. Business institutes offer more "academic" courses and the curriculum is closer to what would be offered in a community or junior college.

International comparison of company training policies

At the beginning of this paper it was stated that one possible explanation for the lower productivity growth in the United States compared with other countries was the way in which other countries trained their workers. This section summarizes some of the key features of the educational and training institutions of West Germany, Sweden and Japan.

West Germany

The West German dual system of vocational training scheme is often referred to as one of the primary forces behind its high productivity growth. While the use of apprenticeships has declined dramatically in countries such as the U.S. and Great Britain, Germany's apprenticeship program continues to develop and expand. Over sixty percent of all German workers have completed an apprenticeship program.

The Apprenticeship program is targeted at 16-19 year olds and the various courses (depending on the eventual level of qualification) can last from 2 to 3 1/2 years. A school leaver must first find an employer willing to hire them and provide instruction to them in their area of interest. Typically, the apprentice will be involved in a low skill level job and be released to classes in a vocational college. The quality and

curriculum of these courses are monitored by the local Chambers of Commerce and Industry (union, management and government representation). In order to qualify in industrial or craft occupations an apprentice has to pass both theoretical and practical examinations. These exams are set by the national government. The apprentice receives a training allowance up to one half of the average basic wage of skilled workers in their occupation/industry but they are considered a regular employee under employment protection legislation.

One of the misconceptions about the German apprenticeship scheme is that it produces workers with a wide range of skills. Although it offers over 450 vocational tracks, the majority of apprentices qualify in a relatively small number of areas. For males these include mechanics (17 percent of all male trainees), electricians, carpenters, bricklayers, bakers, plumbers, and clerks. For females, over fifty percent of all trainees were in programs for shop assistants, hairdressers, clerks, and medical or retail assistants (see Prais and Wagner (1983) for more details). Participation in one of these programs does not necessarily mean, however, that this is the type of job the trainee will eventually have. Certain programs have reputations of producing "good" workers and graduates are sought after by many diverse industries. (e.g. bakers apprentices are very highly represented in the auto industry see Spring (1987)). The German system trains individuals in a specific skill, but perhaps more importantly, it teaches young workers that they will have to

learn many new skills over their work life. However, in spite of the success of the German system, there are tensions between employers and unions over the content of courses and in-house training programs. Unions seek training programs that are as broad and general as possible while firms prefer much more specific training courses. This is due to the fact that German firms pay for wages of the apprentice and the cost of in-house training.

Training in West Germany is not just restricted to the apprenticeship schemes for school leavers. There are many other types of training programs which the government has created to assist adult workers in retraining. As summarized in Disney (1989), these include a voucher system for training, and wage subsidies to firms providing on-the-job training. Adults may enter a certified training course where the training institute is reimbursed by the government for all of the costs of training. The individual may also receive a subsistence allowance which is earnings related in the form of a grant or loan. Originally this program was designed for both employed and unemployed workers but by 1983 66% of the participants were unemployed (Disney (1989)).

The government also supports individual firms providing training through a wage subsidy which is paid to the firm. This subsidy is sometimes referred to as a 'settling-in allowance' (Disney (1989)). This is targeted towards the long term unemployed, older workers without skills, and the disabled.

Japan

The basic educational system in Japan focuses on providing a high level of very general skills to its graduates. Therefore, more firm specific skills must be taught at the firm level. Most of that instruction is done by the supervisor who has the responsibility of teaching and motivating subordinates. Some firms even measure a group's performance by what percentage of the workers can do multiple tasks. Most off-the-job training in Japan takes place through correspondence courses. As in Germany skills testing is an important component of training. There are testing centers in every prefect in Japan. As discussed in Sako and Dore (1988) the tests are pass/fail in the sense that either you are qualified or not in the particular skill being examined. Interestingly it does not matter where you received your training, just that you can do the task.

Under Japan's Vocational Training Law prefect governors can authorize training programs developed by employers, unions, and employers associations. Local and national governments are also required under this law to provide financial assistance to employers and employees participating in in-house training. These take the form of traineeship loans, financial assistance to firms with less than 300 employees, incentive grants for paid educational leave, and professional advisory and institutional services (see Inoue (1985) for more details). As in the U.S., most training is done by large firms but smaller firms are more likely in Japan to try to pull their resources than in the U.S..

Sweden

In Sweden, training is just one component of a very broad economic policy to promote full employment. As stated by Standing (1988), "Publicly funded training is not regarded as the key to full employment; full employment is regarded as the key to the success of training schemes". A great deal has been written about the Swedish model but there are some interesting aspects of the Swedish model related to private sector training that have not been discussed as much. As detailed by Standing (1988), there have been problems in the 1980's with the policy of providing free (re-)training (plus stipend and travel allowance) to all workers who are or run the risk of becoming unemployed. The training programs have had difficulty in inducing unemployed workers to participate in the programs and close to one quarter of all trainees drop out of their courses without becoming qualified. Standing reports that part of this has been due to a fear that participating in such a program would lead to discrimination if employers believe participants are less desirable employees. It is hard to imagine, however, why individuals would feel that employers would discriminate less against someone who was unemployed than to someone in a training program.

Since the early 1980's there has been an expansion of resources devoted to providing in-house training programs to prevent job losses. In addition, there have been subsidies given to firms who provide training for men or women in occupations that are over-represented by one sex or the other. Perhaps most

innovative and controversial was the passage in 1984 of legislation creating "Renewal Funds" whereby large establishments must put ten percent of their net profits into a fund for research and training. Rather than raising taxes and using the revenues to provide government training programs, the government has instead required firms to set aside a minimum amount for training.

Great Britain

The current government in Great Britain has recently proposed dramatic reforms to promote employment growth into the 1990s (U.K. Department of Employment, 1988) that focus on the importance of private sector training. Noting that seven out of ten of the employed workers in the year 2000 in Great Britain are already employed, and that most of these workers have left school at the minimum age of 16 and have not acquired any qualifications since then, the government has established Training and Enterprise Councils (TECs). These councils will plan and deliver training programs at the local level. Specifically, they will assess the skill needs of their local labor market, identify prospects of expanded job growth and the availability of appropriate training programs in the local area. They will then manage training programs for young people, the unemployed, and employed adults requiring new knowledge and technical retraining. There will also be additional support for small firms. At least two-thirds of the TEC members will be top management employers and the remaining members will be senior figures from local

education, training and economic development agencies, and trade unions who support the aims of the council. There is, however, no mandatory role for any group other than the employers. This differs then from the West German system where there is a mandatory role for groups other than employers, especially the trade unions. In fact, the British government states that it hopes to "'place ownership' of the training and enterprise system where it belongs - with the employer" (U.K. Department of Employment, 1988 pp. 40).

With this objective of privatization in mind the British government in October 1989 "privatized" its Skills Training Agency. This agency had trained adults in craft skills and provided training for employed people through contracts with employers. The agency will now become like our for-profit proprietary schools. The British government's role in training will become more focused on assisting in the establishment of recognized standards of qualifications across occupations and training the unemployed.

EXAMPLES OF 'BEST PRACTICE'

The previous section gave a brief survey of what we know about the extent and nature of private sector training in the U.S. and abroad. This section highlights some specific examples of innovations in training programs in the U.S., including the successes and difficulties these programs have encountered. There are many more innovative organizations than those that follow, but the experiences of these organizations captures some

of the key organizational issues surrounding training.

Federal Reserve Board of Boston

As described and discussed in Hargroves (1989), the Boston Federal Reserve has offered training in basic business skills to 10 to 15 new inner-city employees every year since 1973 in their Skills Development Center. The participants are primarily minority, female and young and the program trains these individuals for entry-level clerical positions within the bank. The program is composed of four parts. The participant is first involved in an academic program to learn basic skills (including reading, grammar, spelling, using the dictionary, basic business math, using a calculator) and new clerical skills (including typing word processing, personal computers, and filing). At the same time they are given temporary work assignments so that they can begin to acquire valuable work experience. Once basic skills are acquired, the trainee is given the chance to try a specific job for a one month 'work trial'. If a job match is not made the participant returns to the Skills Center. If the match is successful, the trainee is transferred to the new job.

This program was particularly innovative since it was first initiated during a period of relatively high unemployment. By being well established prior to the tight Boston labor market in the 1980's the program has helped the bank fill the 'hard-to-fill' entry clerical positions with qualified individuals. In a survey conducted by Jeanette Hargroves of the participants in this skills program she found that since the beginning of the

program the placement rates have risen from 56 to 85 percent. The graduates from this program were more likely to remain at the Bank than their peers who had not participated in the program. In addition, the study showed that in the earlier years of the program the trainees were earning slightly more than their peers by the end of their first year at the Bank while in recent years the opposite has occurred. This may reflect the fact that the education/experience gap between the trainees and nontrainees widened over time with trainees in recent years having lower reading skills when they began the program and less work experience.

One of the interesting findings was that for entry level clerical positions the program seemed to be most effective for youths with high school diplomas. Over half of the trainees who did not have a high school degree or equivalent did not graduate. In addition, trainees with more than a high school degree were more likely to resign from the program. One explanation not cited in the report might be that these individuals had more opportunities outside the Bank than the other participants.

The average cost of training per worker was \$7000. However, the study was not able to calculate the potential savings of the program such as the expenditures for recruiting entry-level employees, the staff time to train new employees, or the costs of temporary clerical help. The study concluded that the savings were small but they ensured a sufficient supply of clerical workers. However, that suggests that the savings were actually

rather substantial since the Bank was not facing skill shortages during a tight labor market. The experience at the Boston Federal Reserve highlights the importance of quantifying the costs and benefits of the program.

Digital Equipment Corporation

DEC has had extensive training programs in place for a long time, especially for its professional and technical employees. It is also an employer with a reputation of never laying off workers. The following discussion describes the role of training at DEC when they were faced with an overstaffing crisis but did not want to lay off workers.

In January 1985, DEC introduced its "Transition Process" to deal with overstaffing in the company (see Kochan et. al. (1988) for a complete discussion of this). The process was divided into three stages: (1.) selection of "available" employees; (2.) counselling and training; (3.) exit from the program to another job at DEC or outside the company. The training component of this program included a two week program of counselling to help employees to deal with the shock of being made "available" and to teach career development skills. Retraining, however, was only allowed when an individual had been accepted for a new job within DEC that required additional skills. Therefore, workers were not able to enter a training program and then after completing it apply for new jobs where their new skills would make them more desirable candidates.

The company had anticipated that the retraining program

would be oversubscribed, however, in practice the program had many vacancies. Many employees were unwilling to take the risk of training for a new occupation and many were convinced that the downturn would be short termed so that they waited for a recall to their old jobs. As reported in Kochan et. al. (1988), DEC discovered that the provision of employment security did not automatically motivate its employees to learn new skills or relocate. The authors recommended that the company would have benefited from a policy of retraining first and hiring as a last resort rather than the other way around as it had done. Nevertheless, the company felt that its Transition Process had preserved its reputation as a firm committed to employment security and this resulted in higher morale and loyalty during a difficult period.

IBM

As described in great detail by Jill Casner-Lotto (1988) and summarized by Rosow and Zager (1988), IBM has developed over the years what they refer to as the "Systems Approach to Education". This is simply an approach to training that recognizes the fact training can be provided more efficiently by creating a pool of highly trained education specialists who pool their energies and expertise. The systems approach tries to break the training process into a series of manageable steps and facilitates careful decision making and budget planning at each stage to maintain cost control of training. As Casner-Lotto summarizes, the approach consists of the following steps:

- 1.) design a detailed curriculum for every major job category based on defined business requirements
- 2.) develop instructional design for each course
- 3.) oversee course development with an interdisciplinary professional development team
- 4.) use not only traditional classrooms but also interactive videodiscs, self study, supervised self study, computer-based training, tutored video classroom and satellite classrooms
- 5.) measure and evaluate the effectiveness of the training exercise.

Some of the employees who are covered by this approach include engineers, programmers, marketing representatives, and all managers. Courses range from technical professional development to finance and planning education, information and office systems education and management development training. All managers are required to take a minimum of forty hours of training per year of which 32 hours are in human resource management skills. IBM estimates that their training costs on average are \$50 perday for self-study, computer-based training or interactive videodisc; \$150 per day for classroom education in commuting distance; and \$300 per day for classroom education at a centralized training facility.

One of the unique characteristics of the program is that while IBM has detailed course designs its human resource staff in different countries have the ability to tailor the course

offerings to the kinds of issues they feel are most important for their particular workers. Corporate staff are involved in development of materials but there is country specific flexibility that takes into account the different educational and training levels of employees around the world.

BellSouth

In the 1986 collective bargaining agreement between BellSouth and the Communications Workers of America an innovative training program was introduced called the BellSouth Career Continuation Program (BCCP). The purpose of the program was to assist employees within the company to identify and pursue a career path both within and outside BellSouth during a period of tremendous organizational change. While eligibility for the program was a function of length of service with the company, the program basically took workers who were about to be laid off and enrolled them if they wished into the BCCP with pay and benefits. Program participants were tested to identify abilities, skills and interests to perform jobs within BellSouth and outside the corporation. The test results were then used in career counseling and creating a career plan. Workshops were created to provide information and skills on how to go about looking for a new job and training/employment opportunities available. The Training/Retraining program reimbursed up \$2,500 for items such as tuition and books for courses both within and outside BellSouth.

The program was funded through an Employment Security

Account in which the company initially put \$120 per regular, full time employee. In addition, an Employment Security Advisory Board was establish with responsibility of:

- 1.) Providing general direction and guidance for the BCCP and Training/Retraining programs.
- 2.) Advising BellSouth on career development and job displacement training courses and curricula
- 3.) Reviewing training delivery systems (e.g. technical school, community colleges) available to be used by the company
- 4.) Evaluating the effectiveness of the Training/Retraining program and the BCCP.
- 5.) Encouraging employees to participate in the programs

The Board was made up of 5 union representatives and 5 management representatives.

This innovative program was an attempt to deal with a commitment to the employees to preserve jobs as much as possible on the one hand, but at the same time implement a massive reorganization of the company due to the deregulation of the telephone industry and tremendous technological changes (see Lynch and Osterman(1989)). One of the advantages of this program compared with the DEC program was that while employees received pay and benefits during the program, there was a cap (a function of the length of service of the employee e.g. 12 years of service entitled the employee to 12 weeks of eligibility) of how many weeks they could participate. If at the end of the period they

had not transited into a new job they would leave the company. However, their final severance payment was reduced by the number of days they were in the program and not in counseling or on work assignment. The company hoped that by introducing this provision employees would feel that they were making a financial investment in the training program as well as the company, and that this would increase the effectiveness of the program.

UAW and the Auto Industry

Another example of union-management initiatives in training programs are the joint training programs introduced in the auto industry in 1982. There are differences across the Ford and GM contracts but both agreements include provisions for training and development of active and displaced workers. The UAW-Ford employee development and training program (EDTP) is an interesting example of a training program focused on assisting currently displaced workers and anticipating training needs in the future (for an excellent survey of this see Kassalow (1987)).

EDTP is financed by the company but jointly managed by a board consisting of union and company representatives. The program differs from already established internal training programs in the company such as apprenticeships, and training associated with job reassignment and promotion. Instead it provides tuition assistance for new job training outside Ford in both credit and non-credit courses, assisting active employees with advice and programs for their future both within and outside Ford, and training and counseling in high school completion and

English as a second language. The unique feature of this program is that the company has agreed to finance general skills training to employees who may eventually leave the company. Most firms in the U.S. have been reluctant to provide this type of general skills training.

National Technological University

One of the difficulties associated with training technical and professional staff is the high cost of travel and accommodation for individuals participating in an intensive learning program in their field. One new innovation to deal with this training cost in the U.S. is the National Technological University Network (see Leslie Stackel (1988) for a summary of this). The NTU provides an opportunity for companies to allow employees to follow university level courses but remain on the company site. This organization using a consortium of universities uses satellite technology to offer courses within the field of continuing education in engineering. The NTU broadcasts originate within universities that transmit live to company sites. One of the primary disadvantages of this program has been in the contact between instructors and students. In live broadcasts there are telephone linkages between the instructor and students but the experience has been that students have tended to ask question via electronic mail or phone calls after the class rather than during the broadcast. The nature of the technology means that there is not the eye-to-eye contact that you have in the usual classroom situation. This impacts not

only the students but makes it much more difficult for the instructor to get immediate feedback on how the material is being "digested".

There have been several companies in the U. S. who have used the NTU technology for company training (e.g. Hewlett-Packard, DEC, and Kodak). As described in Stackel (1988) HP requires its engineers to take forty hours per year of continuing education. Employees can fulfill this requirement using the NTU program or courses from MIT or Stanford. The HP experience has found the program to be particularly effective in training older workers who lack the training in computer science of younger workers who need retraining on a piecemeal basis. The lack of one-on-one interaction is a problem but given the alternative in many cases of not being able to offer any retraining the NTU program has been effective. The NTU satellite programs have been developed for individuals in the field of engineering. The technology, however, is not restricted just to those in this field and as advances are made in communications to allow greater faculty-student interaction this type of continuing education may be used in more sites and in different fields.

The National Institute for Learning Technology:

In none of the above examples has there been any discussion of integrating training efforts within companies with school preparation and government policies. The U.S. does not have a detailed national policy for skill formation, however, the following proposal outlines one possible way of coordinating one

set of activities of training providers and users. The office of Productivity, Technology, and Innovation (OPTI) in the U.S. Department of Commerce, is one of several government agencies concerned with the issue of productivity. One of its recent activities was the encouragement of legislation to create a National Institute for Learning Technology. The mission statement of OPTI related to this Institute was:

To increase productivity in the United States via an integrated process for lifelong learning through the application of technology to the learning process.

The goals of OPTI relative to the Institute (see Gordon (1988)) include:

- 1.) developing and applying technology-based learning systems by establishing a National Institute for Learning Technology
- 2.) upgrade the productivity of training and educational delivery systems to ensure the existence of a highly qualified workforce
- 3.) provide a forum for the interaction of government, business, and educational and training interests in the formulation of a national policy on technology-based learning
- 4.) plan and coordinate Federal/private sector research related to the science of technology-based learning
- 5.) be an information clearinghouse on technology-based

training

While this program is hypothetical and quite vague it illustrates one possible direction to develop in order to create better coordination of training in the U.S..

The Boston Compact and Private Industry Council (PIC)

An example of an actual attempt to coordinate skill formation activities of schools, businesses, trade unions and government at the local level is the Boston Compact. The Compact is an agreement signed in 1982 between business leaders, public educators and local government officials to improve the quality of education in order to ultimately enhance the skill levels of Boston high school graduates entering the workplace. This program has been so successful that the National Alliance of Business has replicated the Compact in ten metropolitan areas across the country.

The Compact has several goals. These include raising mathematics and reading levels to match the requirements in the workplace; to lower dropout rates (as high as 50 percent) and to raise daily attendance (close to 25 percent are absent each day); and to achieve a 5 percent per year increase in the number of students placed in jobs or post-secondary education.

The Boston PIC has been an active participant in the Compact. While many U.S. cities have PICs, the Boston PIC has been particularly innovative. The Boston PIC has been providing counseling, training and job placement since 1978. There is a large summer jobs program (over 2,600) and for many students

these jobs become full time regular positions after graduating from high school. The PIC also supplies career specialists to interface with school administrators, guidance counselors, teachers and students. The Boston Compact is an example of a program which seeks to educate and train young people before they enter the workplace so that they will be qualified and better prepared for more specific training when they begin work. The Boston PIC has even served as the basis of the most recent proposals by the British government on employment policies for young people.

CONCLUSIONS

As U.S. firms re-examine the way in which they train and retrain their workers there are a variety of issues and challenges they will face. The old model of mass production which generated narrow job definitions, low skill levels, and limited firm specific training is not an effective structure for new production techniques such as "just-in-time" which require multiskilled workers. In addition, as the service sector continues to grow there is increasing need for "knowledge workers" in professional and technical occupations. If new entrants into the labor force do not have the general skills necessary for the workplace, firms will have to decide whether or not to provide those general skills themselves. This is a difficult decision because unlike Japanese firms where "lifetime employment" leads to low labor turnover, U.S. firms run the risk of investing heavily in workers and then losing them to

competitors.

Many firms, especially larger firms, have chosen to invest in the training of their workers in spite of these problems. But often these firms have difficulty in justifying or evaluating the various training programs they offer. A large part of this is due to the difficulty in measuring the costs and benefits of various training programs. For example, do the costs of training just include the direct costs of providing teachers, materials, and tuition to run a course or do they also include lower productivity, wages etc... How does a company measure the costs of informal training?

Many firms also have problems measuring the outcomes of training. Many training consultants who provide programs to firms include in their training package tests of employees at the end of the course and surveys on how much the employees 'enjoyed' the course. Apart from the moral hazard problem associated with a vendor conducting the course appraisal, it is rare to see a follow-up of trainees six months or a year later when they are back in their jobs which measures how their performance or productivity on the job has changed due to the training program.

As firms set up more training programs to make their workers mulitskilled it will also become necessary for them to examine how they compensate their workers. If there is no monetary incentive for workers to acquire additional skills firms may find that voluntary training programs are undersubscribed. One way of dealing with this is to introduce more profit sharing or pay-for-

knowledge compensation plans.

Smaller firms have limited resources to provide training but at the same time often have the greatest need for multiskilled workers. One option for these smaller firms is that employers in the same geographical area or industry identify a set of common skills they need that workers in the local area do not have, and then pool their resources to set up a program to provide these skills. Employers in Europe have had much more experience than U.S. employers in working in confederations to develop these kinds of programs (e.g. West Germany and Sweden).

Another option that has been proposed in the U.S. to assist firms who wish to train their workers but who do not have the resources to do this is to give various tax breaks or subsidies to firms who train. While this may address the problem of how to encourage firms to provide more general training when labor mobility is high, there are some limitations with this type of program. For example, should firms who receive subsidies be monitored to make sure that they are using the money for training or for training they would not have otherwise provided? Are subsidies sufficient alone to help smaller firms? Would expansionary macroeconomic policies be more effective in raising the skill levels of workers?

There is clearly some need at the state and/or national level for coordination of training efforts in the U.S.. Whether or not this takes the form of the German dual system or some other system is not as important as finding some structure to

increase the coordination of training efforts by firms, local, state and federal government, unions, schools, and other training institutions. While the productivity crisis in the U.S. is not only a function of our skill formation process this may be a major component of our current difficulties. As Europe moves to greater coordination in 1992 the U.S. will be challenged to do the same if it wants to remain competitive.

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Table 1
Average Annual Rates of Growth in Output per Employee-Hour
by Industry

<u>Industry</u>	<u>Time Period</u>			
	1947-67	1967-73	1973-79	1979-87
Transportation	1.8	2.7	1.1	-0.5
Communications	5.3	4.6	4.3	5.1
Electric, Gas & Sanitation	6.3	4.8	0.0	1.4
Wholesale Trade	2.9	3.1	0.1	2.4
Retail Trade	2.4	2.0	0.9	1.2
Finance, Insurance and Real Estate	1.5	0.9	0.3	-1.2
Services	2.1	1.8	0.3	0.3

Source: Unpublished data from BLS's Productivity Division as reported in David O'Neill, progress report "The Productivity Slowdown and the Service Sector", 1989.

Table 2
Mean Cost of Training Per Employee

Occupation

Managers \$1,408

	<u>Union</u>	<u>Nonunion</u>
Professional/Technical	\$1,037	\$1,408
Clerical	\$ 873	\$ 368
Manufacturing/Production	\$ 470	\$ 359

Source: Bartel (1989)

Table 3
Examples of Training Questions

Data: Panel Study of Income Dynamics

(Mincer (1983, 1986), Brown (1983, 1989), and Lillard and Tan (1986))

"On a job like yours, how long would it take the average person to become fully qualified?"

"Are you learning skills on the current job which could lead to a better job or promotion?"

National Longitudinal Survey, Older & Young Men and Women Cohorts

(Mincer and Lillard and Tan)

"Do you receive or use additional training (other than schooling training) on your job?"

"What was the longest type of training you have had since the last interview?"

Current Population Survey, January 1983

(Pergamit and Shack-Marquez (1986) and Lillard and Tan)

"What training was needed to get the current or last

job and what training is needed to improve skills on the current job?"

Employment Opportunity Pilot Project Survey - Employer Survey

(Barron et. al. (1987))

"Number of hours typically spent by a new employee in the position last filled watching other people doing the job rather than doing it himself during the first three months of employment"

"Number of hours a new employee in the position spends in formal training"

National Longitudinal Survey Youth Cohort

(Lynch (1988, 1989))

"In addition to your schooling, military and government sponsored training programs, did you receive any other training for more than 1 month?"

"Where did you receive this training?"

Table 4

Providers of Training to Improve Skills by Selected Occupation

Percent of all workers receiving training by source

	School	Formal Company	Informal OJT	Other
<u>Occupation</u>				
Executive, admin., & managerial	18%	17%	16%	8%
Professional	34	15	14	11
Technicians	20	18	19	5
Sales	7	13	15	4
Admin. support	10	10	15	2
Private Household	1	1	1	1
Service, except P.H.	7	8	12	3
Farming	5	2	7	5
Construction	7	7	13	2
Machine operators, assemblers, & inspectors	3	4	16	1
Transportation	2	6	9	1
Laborers	2	2	10	-

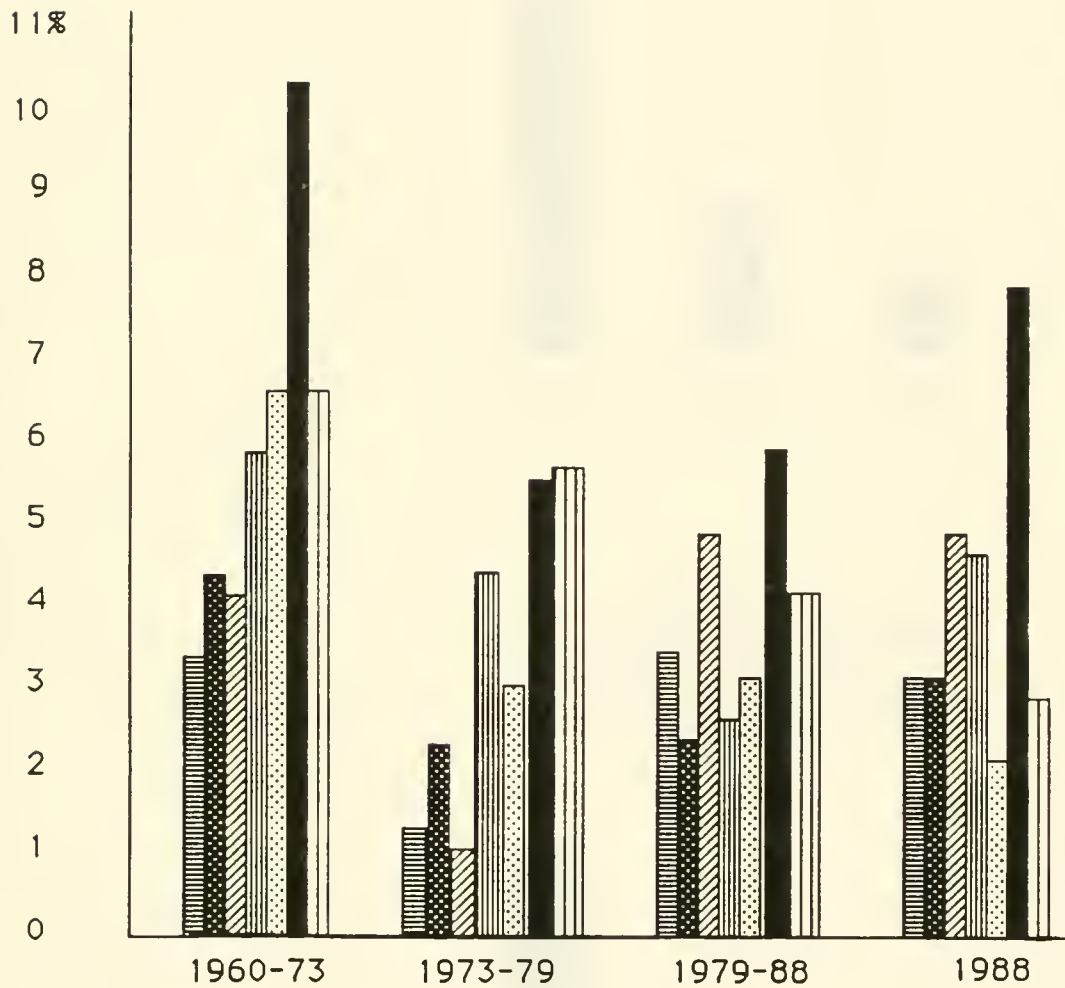
Source: January 1983 CPS

Note: Many workers reported more than one source of training


Figure 1


**AVERAGE ANNUAL PERCENT CHANGE
IN MANUFACTURING PRODUCTIVITY**


(Output per hour)




Source: BLS


U.S. 

Sweden 

Canada 

Japan 

U.K. 

Italy 


West Germany 

Figure 2a

**TOTAL REAL \$ SPENT ON
PRIVATE SECTOR TRAINING**
(1983 dollars)

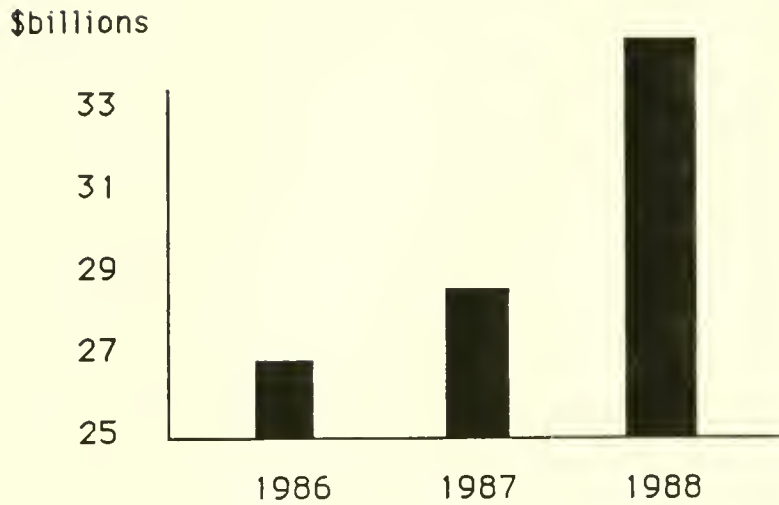
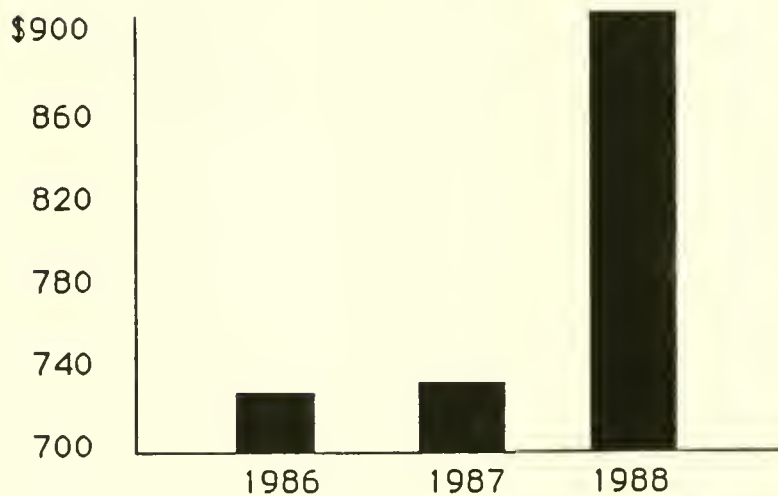


Figure 2b

**AVERAGE REAL TRAINING \$
PER TRAINED WORKER**
(1983 dollars)



Source: Training magazine Industry Reports, various years

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